

# New and Emerging Occupations

Jerome Pikulinski

The process for developing the current and future employment estimates for established occupations is systematic—starting with collecting information on the current workforce and concluding with analysis leading to projections of this employment. In addition to measuring employment for existing occupations, many consumers of data also want information on new occupations. The Occupational Employment Statistics (OES) survey conducted by the Bureau of Labor Statistics (BLS) provides information about new and emerging (N&E) occupations in addition to employment and wages estimates for established occupations.

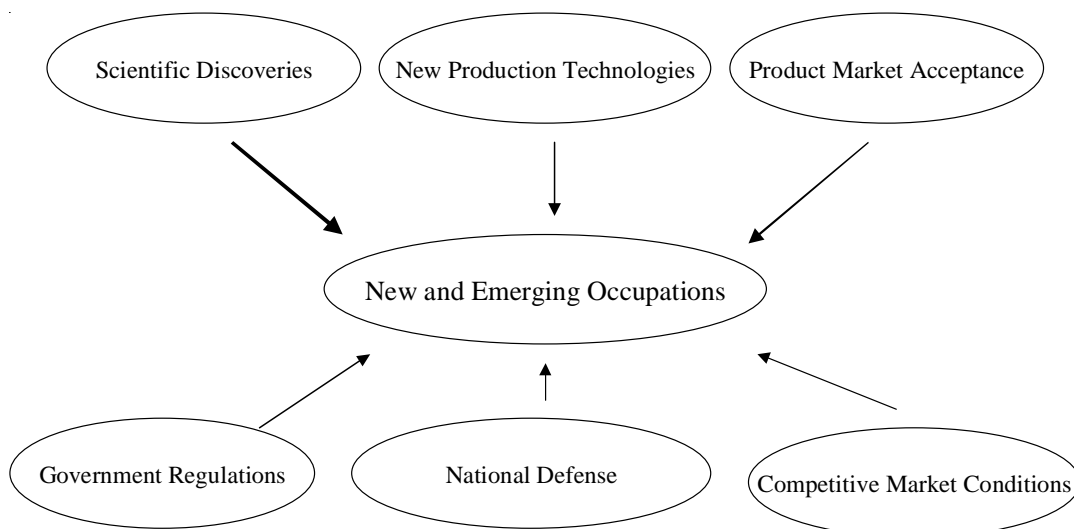
## Background

The identification of new occupations requires an understanding of the processes that create new forms of work in our economy. These processes, shown in the diagram below, include new scientific discoveries, development of new production technologies, new product market acceptance, government regulatory requirements, research on and de-

velopment of national defense capabilities, and a variety of competitive market conditions. By the time that one can conclusively confirm that there indeed is a new occupation in the workforce, the occupation is often an accepted requirement in the evolving employment market. Because occupations tend to evolve in the processes identified above, new job titles in related industries that appear in the OES survey serve as clues to the identification of N&E occupations.

Sometimes, confusion can develop about how to interpret a job title. An occupational classification is a broad concept that generally includes numerous job titles. On one hand, a title may simply be a variation in the way of naming an existing occupation. When a new title appears in the workforce, it usually refers to a job that includes activities that relate to the definition of an existing occupation. On the other hand, job titles and related descriptions may be sufficiently explicit to suggest a skill departure from existing occupational classifications. Sometimes, the occupation title stays the same, but the core activities that define the occupation change. In such cases, a determination must be made as to whether the new title and duties constitute a new occupation.

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Relating the new title to knowledge of one or more of the processes previously identified provides the clues needed to treat the occupation as new and emerging. Occasionally, a new occupation appears that has a new title and clearly has activities that do not fall within the definition of any existing occupation. Typically these new occupations are coded into one of the residual classifications of the Standard Occupational Classification (SOC) system. In addition to jobs with new titles and work activities, some occupations, though not new, are migrating into new industries where the related technologies and processes were not previously found.

## Methodology

The observations in this article are based on data from establishments responding to the Occupational Employment Statistics (OES) survey. This survey is conducted by the State Workforce Agencies in cooperation with BLS. The responding establishments complete survey forms, using a limited list of occupations and their definitions. They indicate how many workers they have in these occupations by specific wage intervals. They further provide the job title and job definition for any worker not included in the list of occupations on the form.

Labor market analysts in the States review the entries of titles added to the survey form by respondents and determine the occupational classifications into which the data should be placed. As indicated above, the occupational classification structure used in the OES survey is the 2000 SOC system. Entries that cannot be assigned to a specific detailed occupation usually are assigned to “all other” categories. These original entries include clues for identifying N&E occupations. Sometimes, it is not clear which occupation the respondent entry relates to. If the State analyst finds that the entry does not relate to any occupation in the SOC, including the “all other” categories, he or she may seek assistance from a BLS coding expert. These inquiries provide other clues for identifying N&E occupations.

The information in this report was obtained from the 2001 OES survey. States sent the relevant survey entries dealing with potentially new occupations to BLS. At BLS, the information is reviewed and grouped by potential occupation. There is a great deal of judgement that must be used at every stage of this process. As a result, there are no employment estimates for these occupations. Nonetheless, the information provided can be useful to the overall effort of identifying N&E occupations.

In other words, the information provided in this report consists simply of counts of observations made along the way. In total, the number of questionnaire sheets that had information about N&E occupations, 102, is estimated to be much less than one-tenth of 1 percent of the total of reviewed supplemental sheets. This number was used in percent computations for chart 1, whereas counts and percentages in chart 2 are based on the distribution of a total of 526 workers who were found in N&E occupations.

## Patterns of new and emerging occupations

The 102 selections of potential N&E occupations were analyzed as a group with respect to a variety of distributions: Establishment size, industry, wage, regional, and classification distribution. When possible, comparisons include related distributions of national employment data.

*Establishment size.* Chart 1 shows that 50 percent of the N&E occupations were reported by establishment units having fewer than 50 employees. More than 90 percent of the establishments were in the category having fewer than 50 employees. It appears that small establishments, by virtue of their numbers in this interval, have an edge in the creation of N&E occupations. These surveyed units could have been either small establishments or special operating units within larger firms. The lowest percentage of N&E occupations was reported by firms with more than 1,000 employees. However, larger firms contribute a higher proportion of N&E jobs relative to the number of establishments their size.

There is another comparison to be made between the relative total employment of firms and the incidence of employment in N&E occupations by firm size. Chart 2 shows that, in the category of establishments with fewer than 50 employees, employment in N&E occupations is a higher proportion of total N&E employment than it is of national employment in that size category. The same is true in the category of establishments with 50 to 99 employees. This suggests that firms with 100 or more employees do not generate N&E occupations in proportion to their representation in total national employment.

*Industry distribution.* New and emerging occupations occur in a number of industries. More than 60 percent of the N&E occupations arise in services. (See chart 3.) This dominant major industry group includes health, social services, legal assistance, and education. Examples of N&E occupations include tissue process technicians, hazardous materials drivers, and genetic counselors, among others. In addition, services includes personal, business, and amusement and recreation services.

Manufacturing, primarily in durable goods, is the second largest source of N&E occupations. Wholesale and retail trade continue to be a source of new and emerging occupations. Other noteworthy industries include transportation, communications, and utilities.

*Wage distribution.* One-half of the reported new and emerging occupations are found in the group of wage ranges under \$17. The N&E occupations in the two highest wage categories include researchers in ultrasound and transducer technology, compliance engineers, chief software architects, and technology managers.

The wage data reported here are the modal values of wages reported for each N&E occupation. The distribution shown in the chart 4 approaches a normal one. There is some skewing toward the low end of the range.

*Regional distribution.* Chart 5 indicates that some regions of the country may account for a larger percent of N&E occupations. The number of such occupations is relatively high in Western and Southwestern States and low in Southeastern and Midwestern States, compared to the total workforce employed.<sup>2</sup> The N&E occupational data reported in this chart are based on counts of job titles in each region.

*SOC distribution.* From an occupational classification perspective, the pattern of N&E occupations consists of a complex distribution that cuts across previously noted industry patterns. (See chart 6.) The 2001 N&E data showed a number of production occupations that cut across industries. Study and experience continue to show that, within industry classifications, many positions fall into occupational patterns that cut across industry lines. For example, production occupations were found in the construction, manufacturing, and wholesale trade industries, but the manufacturing industry also employs managers; installation, maintenance, and repair personnel; transportation workers; and personnel to staff business and financial operations. These occupations, in turn, are common to many other industries.

### Summary of patterns in N&E occupations

The patterns noted in the 2001 OES data indicate that most N&E occupations appeared in firms with fewer than 100 employees. No single industry dominated in the creation and growth of these occupations. More than one-half of these were distributed among human services, transportation, communications, business and personal services, and a wide variety of wholesale and retail trade activities. Slightly more than half of all N&E occupations were paid in a range of \$8.50 to \$17. No State dominated in the creation of N&E occupations. No single occupation classification dominated the field of N&E occupations; however, healthcare, management, and production occupations were the three most frequent occupational classifications observed.

### Developments in particular occupational groups

Lists of specific occupations that are new or emerging are presented in the following sections.

#### Occupations in the construction field

- Metal stud framer
- Epoxy floor installers

<sup>2</sup> The regions in Chart 5 are defined as follows: Western: Alaska, Arizona, California, Guam, Hawaii, Idaho, Nevada, Oregon, and Washington. Southwestern: Arkansas, Colorado, Kansas, Louisiana, Missouri, Montana, New Mexico, Oklahoma, Texas, Utah, and Wyoming. Midwest: Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Southeastern: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. Mid-Atlantic: Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia. New England: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

New building systems, particularly in commercial construction, and increased use of new materials explain the appearance of new occupations in the traditional construction industry.

#### Occupations in the field of educational services

- School diagnosticians
- Home-school liaison
- Adaptive physical education specialist
- Technology infusion specialist
- Distance learning coordinators
- Director of technology
- Poison information specialist
- Technology coordinator
- Poison information technician
- Athletic compliance coordinator

Education continues to create N&E occupations. Some of these arise in connection with the objective of tailoring educational services to students' special needs. Others are associated with the use of improved telecommunication applications to deliver education. The spread of technology and its general uses in education explain the creation of other specialist occupations. Governmental regulations governing athletic and other physical education programs have contributed to the creation of other occupations in special education and the administration of athletic programs.

#### Health services occupations

- Monitor technicians
- Medical specimen couriers
- Patient-care technicians
- Urine sample collectors
- Polysomnographic technicians
- Tissue process technicians
- CRN anesthesiologist
- Tissue and eye bank technicians
- Spiritual caregiver
- Tissue service coordinator
- Genetic counselor
- Sanitization technician
- Medical certification clerk
- Plasma processor
- Schedulers for surgical cases
- Night monitors

In the health field, N&E occupations have addressed specialized patient care, continuing responses to advancing medical technologies, improved scheduling of surgical pro-

cedures, and alternative medical service delivery approaches. Increased attention has been directed toward management and care of tissue banks. In light of recent genome developments, genetic counselors are appearing upon the medical scene.

### **Social service occupations**

- Bill review nurse
- Adult protective services
- Energy auditor
- HazMat drivers
- Weatherization director
- Director, information management
- Cheer workers
- Disaster preparedness staff

There are several groups of occupations in social services—nurses and information management workers employed in new fields; workers helping seniors and others in their homes; and disaster preparedness staff. Nurses continue to be employed in areas other than those directly related to providing clinical care services, primarily in the control of medical costs. In addition, a new occupation for nurses was found in the legal field, where they are employed as legal nurse staff specialists. Information management, like nursing, is not a new field, but one that continues to appear in a number of new industry settings. Senior and disabled persons are creating situations calling for cheer workers, who provide opportunities for therapeutic interaction, and others, who investigate charges and complaints of mistreatment. Drivers qualified to deliver hazardous materials may provide oxygen to residences and other service locations. Providing services for the insulation and heating of residences has created occupations in weatherization and heating cost recovery. Finally, increased awareness of disaster preparedness is driving the creation of related positions.

### **Transportation occupations**

- Horsedrawn carriage drivers
- Handicapped bus aides

Clearly carriage driver is not a new occupation; however, its appearance in connection with the development of urban entertainment districts makes this occupation noteworthy. Attention to the mobility needs of handicapped persons has contributed to the creation of aide occupations to assist them on buses.

### **Service occupations**

- Surveillance person
- Producer-Internet provider (ISP)
- Psychic counselors
- Chief software architect

- Matchmakers
- Web analyst
- Bar-proof checker
- Digital imagers and modelers
- Customer insight analyst
- Interactive media planner
- Senior supply chain manager
- Televideo engineer
- Divers—underwater inspectors

A variety of service occupations are appearing. Some deal with security needs. Others reflect cultural attitudes about future uncertainties or finding a mate. Applications of behavioral science to marketing are creating other kinds of marketing research jobs. The continuing drive to improve the efficiency of manufacturing operations through better material management has created specialist positions. Increased attention to national security has created highly specialized underwater inspection jobs at docks and ports.

Of special note are the employment effects of the Internet and telecommunication technologies. A variety of new, specialized occupations continue to appear as a result of these, such as producers for Internet service provider sites, Web analysts who study utilization patterns, and interactive media planners. The pattern in development of these N&E occupations appears to have its parallel in the development of new occupations that followed the introduction of automotive technology. The latter industry has continued to contribute to N&E occupations for more than 100 years. The same engine for job innovation seems to be developing within the Internet and telecommunication industries.

### **Engineering services and manufacturing occupations**

- Hazardous material engineer
- Neon glass benders
- Compliance engineer
- Cultured marble caster
- Laser engineer
- Glue mixer
- Optical design engineer
- Perfumers
- Optical engineer
- Translators
- Roof truss designers
- Missile specialists
- Pharmacokineticist
- Truss layout and assembly workers

New materials and processes have contributed to the creation of new occupations, while the regulatory concern for

the associated environmental and health impacts of these have created additional occupations. The use of lasers and various optical technologies continues to generate new occupations. Use of manufactured housing components has produced both design and production occupations. The drug industry has seen the creation of an occupation, pharmacokineticist, concerned with establishing dosage standards related to the drug availability of retained drug dosages in patients.

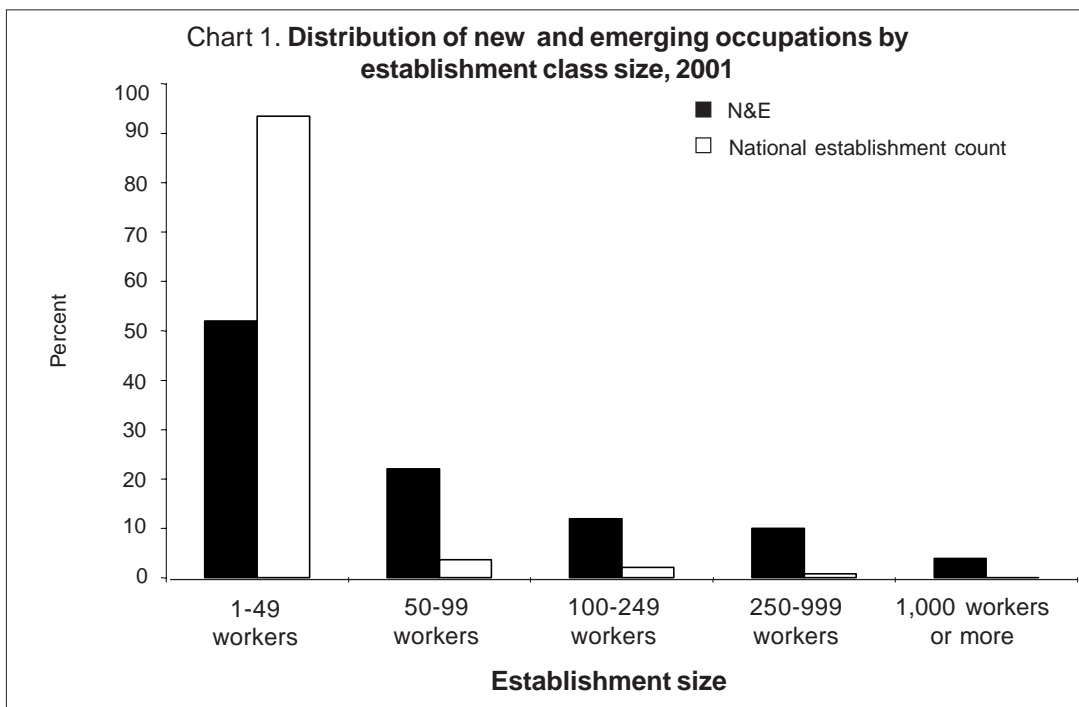
Some occupations are not new but are once again emerging due to consumer preferences. The cultural resurgence of neon lighting has created the need for neon benders. Market demand for cast marble surfaces has resulted in more work for those who cast it. Finally, the growth of small-scale perfume distributors has led to growth in employment of perfume mixers.

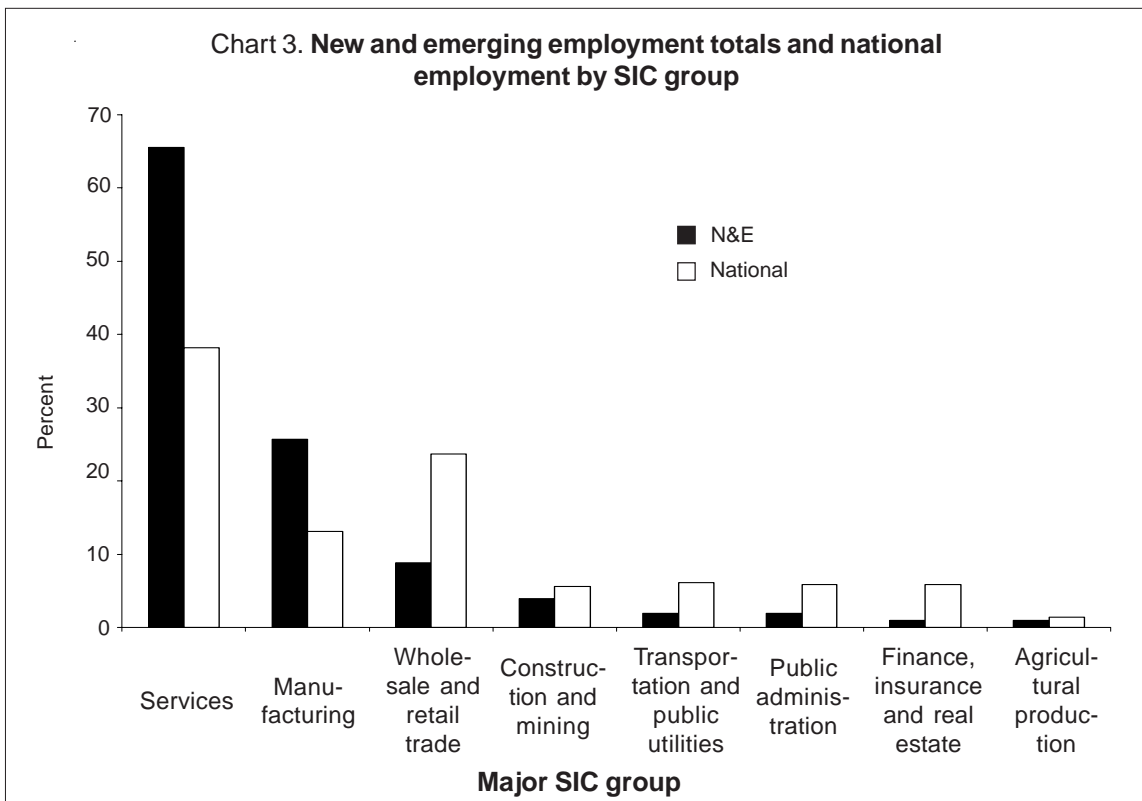
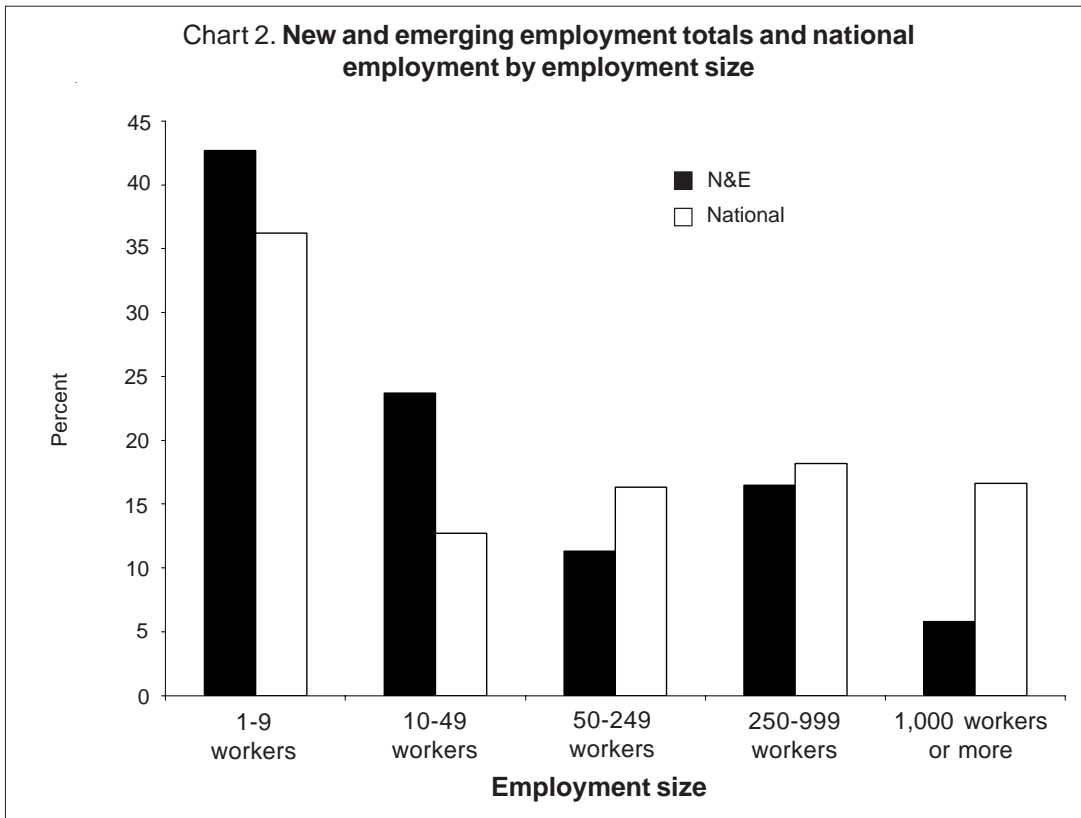
Other occupations that are not new but are emerging in engineering and sciences include translators, as manufacturers' foreign markets and contacts increase. The maintenance and renewal of U.S. national defense capabilities have contributed to the expanded employment of missile specialists.

### Summary and conclusions

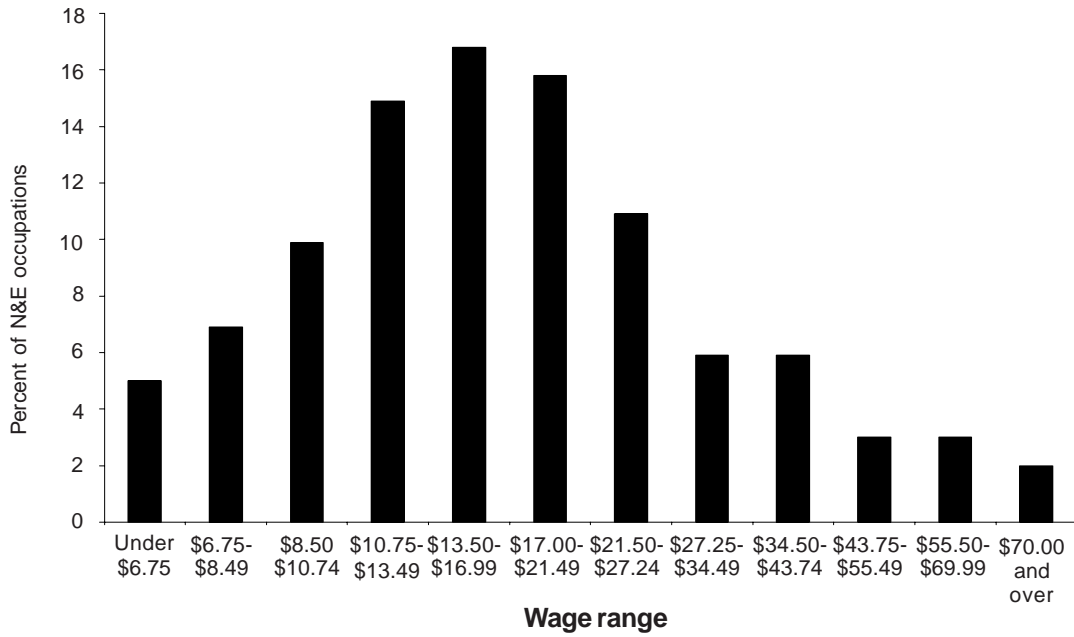
The "supplemental sheet" data from the 2001 OES survey have yielded a number of observations about potentially new and emerging occupations. As pointed out in the methodology discussion above, the methods employed to analyze these developments more closely resemble case study techniques. No claim is made about statistical significance and reliability; however, comparisons with total employment patterns suggest the reasonableness of the observations. A number of occupations have been highlighted to substantiate patterns with specific details.

If any conclusions are possible, they are that new and emerging occupations are being created throughout the economy, in many industries and in many States. To identify these new and emerging occupations, it is necessary to monitor developments in a number of areas: Scientific discoveries, new production technologies, market acceptance of new products, competitive market conditions, national defense, and government regulations. With respect to new and emerging occupations, new technologies and increasing human needs serve as the engine and fuel for their creation and expansion. ■

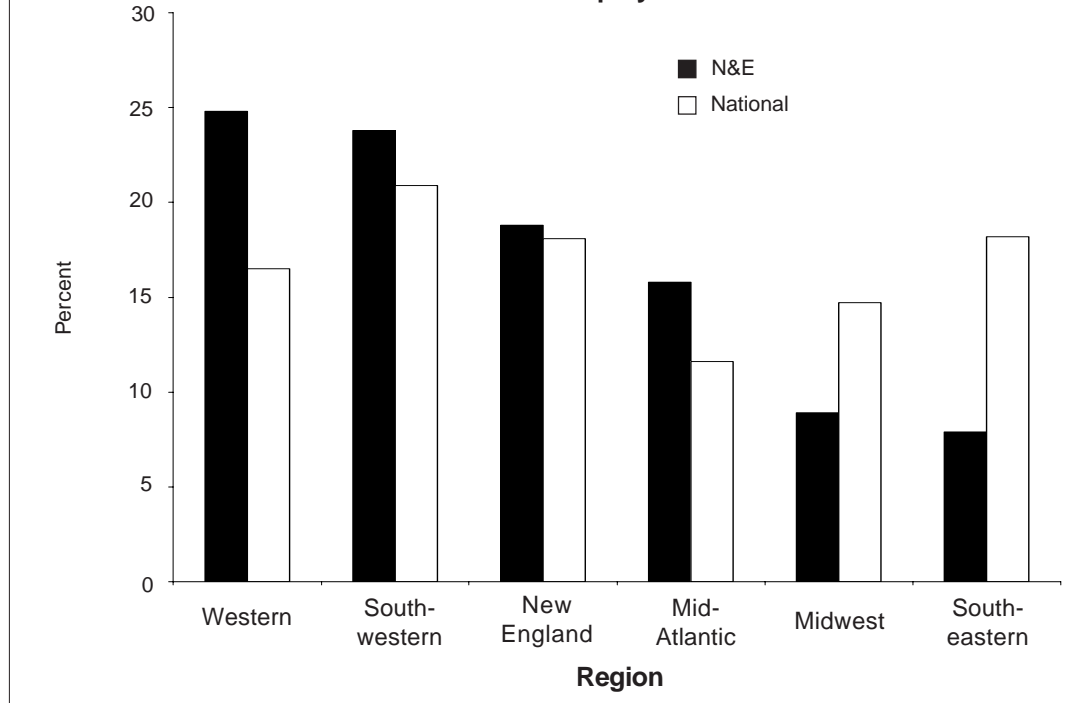




**Chart 4. Relative distribution of new and emerging occupations by survey wage range**



**Chart 5. Regional distribution of new and emerging occupations and national employment**





**Chart 6. Relative distribution of new and emerging occupations by major SOC title**

